The Parrot Effect – a study of the ability to imitate a foreign language

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Abstract

This experiment has the intention to answer the question: how good are people at imitating a foreign language? The results show that it is not completely necessary to get all the phonetic segments of the word right as long as you match the duration of the word and the manner in which the word was originally spoken. The results came from a panel of naïve listeners that graded the imitation.

Introduction

What decides whether one is perceived as a competent speaker of a foreign language seems to be in the pronunciation rather than the grammatical knowledge or vocabulary. The performance is more important than the competence.

How skilled is an untrained speaker at imitating a completely foreign language and how will they be graded by naïve listeners?

As the headline of this report suggests, the participants in this experiment resemble parrots in that they mimic what they hear without understanding what is being said. This experiment only has the intention to explore the ability to imitate, not the ability to learn a second language.

Professor John R Skoyles (1998) lists some of characteristics of imitation: It is independent of native language, language skills, word comprehension and the intelligence of the speaker; it is prelinguistic and occurs independently of normal speech.

Very little previous research has been done in this area. Most of the research is about second language acquisition where imitation is seen only as a step on the way to learning a foreign language and not as an isolated process. Research done on listening comprehension strategies in second language acquisition indicates three stages in listening comprehension: perceptual processing, parsing and utilization (O'Malley et al., 1989). Our hypothesis is that a similar process takes place during imitation (Fig. 1).
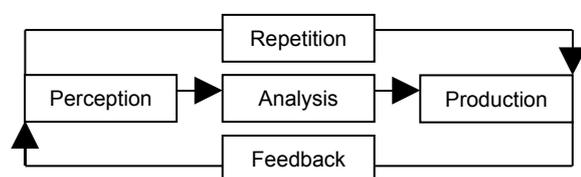

Figure 1. Stage one in the process is perception of the acoustic signal, stage two is analysis of the content of the signal and stage three is production. The stages in this process are dependent of each other as a chain reaction, where stage one and three is connected by feedback and can be repeated if necessary until the pronunciation matches the target.

Imitation is not the same as learning a language, but it is a necessary condition in order to succeed with language acquisition. Professor John R Skoyles (1998) concludes: "In summary, we have a remarkable though still scientifically under-explored skill. It is unlikely we would possess it unless it played an important role in speech. That role is likely to be for theoretical and empirical reasons to enable vocabulary acquisition."

Method

The data in this experiment consists of 8 Portuguese words read by a native speaker, recorded, repeated and randomised, which gave a total of 16 target words. The words were played back one at a time to ten participants with Swedish as their first language and no previous knowledge of Portuguese. The listeners imitated the words immediately after hearing them and this was recorded for analysis. The words used were chosen by the criterion that

they could contain both phonemes present and non-present in the Swedish language.

In order to examine the results, all the recorded material was transcribed and compared with the target pronunciation from the native Portuguese speaker on a segmental level, phoneme by phoneme. The measured variation from the duration of each target word was also included in the results.

Twelve naïve listeners with Swedish as their first language were then used as a judging panel, in order to grade the results of the imitations. 4 representative words were chosen from the list of 16 to be judged. The panel graded the target words on a scale from 1 to 5, where 1 sounded not at all like the target word and 5 sounded very much like the target word.

As mentioned above, 16 Portuguese words were chosen for the analysis. The words were pronounced twice by ten different naïve speakers. A sample of four words by four of the naïve speakers were then chosen to be presented to the panel. Each word was pronounced twice.

The four imitators that were judged by the panel were chosen by the following criteria: Participant 9 had the lowest number of incorrect phonemes in the imitation; participant 5 had the highest number of incorrect phonemes in the imitation; participant 2 was a male as the Portuguese native speaker and participant 7 was chosen as the imitation was delivered in the same manner as the Portuguese native speaker; confidently and with high amplitude.

Results

The results are calculated on four of the target words imitated by four of the participants.

Table 1. Number of incorrect phonemes in the imitation and the grades from the judging panel for each participant

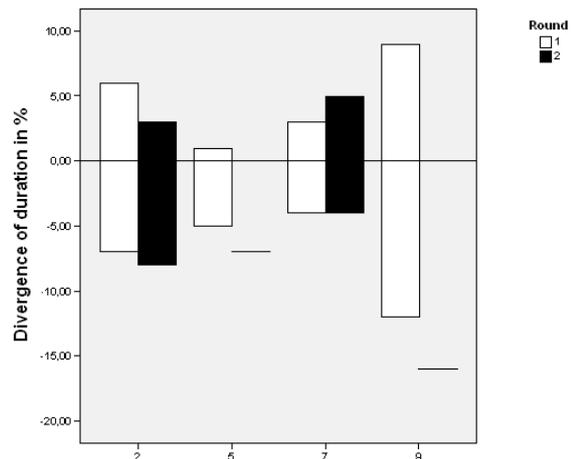|	Participant	2	5	7	9
N. of Incorrect phonemes	Round 1	4	6	6	0
	Round 2	5	6	4	2
Grade	Round 1	3,33	3,35	3,46	3,25
	Round 2	3,11	3,11	3,53	2,91
Total grade	Round 1+2	**3,22**	**3,23**	**3,50**	**3,08**

Figure 2. The Y-axis represents the mean variation of the duration in percent and the X-axis represents the 4 participants for both of the imitation rounds. 0,00 is the target pronunciation duration from the Portuguese native speaker.

Discussion

According to the results, it is more important to the panel that the imitation does not differ too much from the target pronunciation in terms of duration, rather than it correctly matches all phonemes. This is shown by the grades given to the imitations by the panel: Participant 9, with the lowest number of incorrectly pronounced phonemes in the imitation still got the lowest grade, probably due to the fact that she showed the most divergence in terms of duration. Participant 7 who incorrectly pronounced many of the phonemes, but who demonstrated the least divergence in terms of duration received the highest grade. This grade can also be due to the fact that she was the one who imitated the Portuguese native speaker with the same manner, confidence and with high amplitude.

Conclusion

What makes a good imitator? The results of this experiment show that to succeed with an imitation it is more important not to diverge from the correct duration and keep the manner in which the word was originally spoken than to match each phoneme. This experiment has shown that you can get away with more mistakes on a segmental level if you get the supra segmental level right.

References

O'Malley J M, Chamont A U & Küpper L (1989). Listening comprehension strategies in second language acquisition. *Applied Linguistics*, 10: 418-437.

Skoyles J R (1998). Mirror neurons and the motor theory of speech. *NOETICA: A cognitive science forum*, Open forum issue 10